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|---|----------------------|----------------------------------|-------------|
| TRANSMITTAL FORM (to be used for all correspondence after initial filing) | Application Number | 10/063,779 | |
| | Filing Date | 05/12/2002 Certificate | |
| | First Named Inventor | Kay Ming Lee MAR 01 2006 | |
| | Art Unit | 1756 Office of Correction | |
| | Examiner Name | SALEHA R. MOHAMED | |
| Total Number of Pages in This Submission | 11 | Attorney Docket Number | NAUP0469USA |

| ENCLOSURES (Check all that apply) | | |
|---|---|---|
| <input checked="" type="checkbox"/> Fee Transmittal Form | <input type="checkbox"/> Drawing(s) | <input type="checkbox"/> After Allowance Communication to TC |
| <input type="checkbox"/> Fee Attached | <input type="checkbox"/> Licensing-related Papers | <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences |
| <input type="checkbox"/> Amendment/Reply | <input type="checkbox"/> Petition | <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) |
| <input type="checkbox"/> After Final | <input type="checkbox"/> Petition to Convert to a Provisional Application | <input type="checkbox"/> Proprietary Information |
| <input type="checkbox"/> Affidavits/declaration(s) | <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address | <input type="checkbox"/> Status Letter |
| <input type="checkbox"/> Extension of Time Request | <input type="checkbox"/> Terminal Disclaimer | <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): |
| <input type="checkbox"/> Express Abandonment Request | <input type="checkbox"/> Request for Refund | 1. A copy of the front page of Patent No. 6,974,650 |
| <input type="checkbox"/> Information Disclosure Statement | <input type="checkbox"/> CD, Number of CD(s) _____ | 2. A copy of the original Declaration |
| <input type="checkbox"/> Certified Copy of Priority Document(s) | <input type="checkbox"/> Landscape Table on CD | 3. A copy of the original Assignment |
| <input type="checkbox"/> Reply to Missing Parts/Incomplete Application | Remarks | 4. Supplemental application data sheet |
| <input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53 | Request for Certificate of Correction | |
| SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT | | |
| Firm Name | North America Intellectual Property Corporation | |
| Signature | <i>Winston Hsu</i> | |
| Printed name | Winston Hsu | |
| Date | Reg. No. | 41,526 |
| | FEB 24 2006 | |

| CERTIFICATE OF TRANSMISSION/MAILING | | |
|---|------------------|------------------|
| I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below: | | |
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This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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PTO/SB/17 (12-04)
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| | | | |
|---|--|--------------------------|-----------------------|
| Effective on 12/08/2004. Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818). FEE TRANSMITTAL For FY 2005 | | Complete if Known | |
| <input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27 | | Application Number | 10/063,779 |
| TOTAL AMOUNT OF PAYMENT (\$) 100.00 | | Filing Date | 05/12/2002 |
| | | First Named Inventor | Kay Ming Lee |
| | | Examiner Name | SALEHA R. MOHAMEDULLA |
| | | Art Unit | 1756 |
| | | Attorney Docket No. | NAUP0469USA |

| | |
|--|--|
| METHOD OF PAYMENT (check all that apply) | |
| <input type="checkbox"/> Check <input type="checkbox"/> Credit Card <input type="checkbox"/> Money Order <input type="checkbox"/> None <input type="checkbox"/> Other (please identify): _____ | |
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| | | | | | | | |
|---|--------------------|------------------------------|---|------------------------------|-------------------------|------------------------------|------------------------------|
| FEE CALCULATION | | | | | | | |
| 1. BASIC FILING, SEARCH, AND EXAMINATION FEES | | | | | | | |
| | FILING FEES | | SEARCH FEES | | EXAMINATION FEES | | |
| Application Type | Fee (\$) | Small Entity Fee (\$) | Fee (\$) | Small Entity Fee (\$) | Fee (\$) | Small Entity Fee (\$) | Fees Paid (\$) |
| Utility | 300 | 150 | 500 | 250 | 200 | 100 | _____ |
| Design | 200 | 100 | 100 | 50 | 130 | 65 | _____ |
| Plant | 200 | 100 | 300 | 150 | 160 | 80 | _____ |
| Reissue | 300 | 150 | 500 | 250 | 600 | 300 | _____ |
| Provisional | 200 | 100 | 0 | 0 | 0 | 0 | _____ |
| 2. EXCESS CLAIM FEES | | | | | | | |
| Fee Description | | | | | | | Small Entity Fee (\$) |
| Each claim over 20 or, for Reissues, each claim over 20 and more than in the original patent | | | | | | | 50 |
| Each independent claim over 3 or, for Reissues, each independent claim more than in the original patent | | | | | | | 200 |
| Multiple dependent claims | | | | | | | 360 |
| Total Claims | | | | | | | |
| Extra Claims | | | | | | | |
| Fee (\$) | | | | | | | |
| Fee Paid (\$) | | | | | | | |
| Multiple Dependent Claims | | | | | | | |
| Fee (\$) | | | | | | | |
| Fee Paid (\$) | | | | | | | |
| 3. APPLICATION SIZE FEE | | | | | | | |
| If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | | | | |
| Total Sheets | | Extra Sheets | Number of each additional 50 or fraction thereof | | Fee (\$) | Fee Paid (\$) | |
| _____ - 100 = _____ | | _____ / 50 = _____ | (round up to a whole number) x _____ | | = _____ | | |
| 4. OTHER FEE(S) | | | | | | | |
| Non-English Specification, \$130 fee (no small entity discount) | | | | | | | _____ |
| Other: Request for Certificate of Correction | | | | | | | 100.00 |

| | | | |
|---------------------|--------------------|-----------------------------------|--------------|
| SUBMITTED BY | | | |
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| | | Date | FEB 24 2006 |

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Respectfully submitted,

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Date: FEB 24 2006

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US006974650B2

(12) **United States Patent**
Lee et al.

(10) **Patent No.:** **US 6,974,650 B2**

(45) **Date of Patent:** **Dec. 13, 2005**

(54) **METHOD OF CORRECTING A MASK LAYOUT**

(75) **Inventors:** Kay Ming Lee, Pai (SC); Cheng-Wen Fan; Hsin-Chu (TW); Jiunn-Ren Hwang, Hsin-Chu (TW); Chih-Chiang Liu, Hsin-Chu (TW)

(73) **Assignee:** United Microelectronics Corp., Hsin-Chu (TW)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 297 days.

(21) **Appl. No.:** 10/063,779

(22) **Filed:** May 12, 2002

(65) **Prior Publication Data**

US 2003/0211398 A1 Nov. 13, 2003

(51) **Int. Cl.** G03F 9/00

(52) **U.S. Cl.** 430/5; 430/30

(58) **Field of Search** 430/30, 5, 22; 382/144

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,879,844 A * 3/1999 Yamamoto et al. 430/30
 5,916,716 A * 6/1999 Butsch et al. 430/30
 6,120,953 A * 9/2000 Lin 430/30
 6,475,684 B2 * 11/2002 Ki 430/30
 6,586,146 B2 * 7/2003 Chang et al. 430/30

* cited by examiner

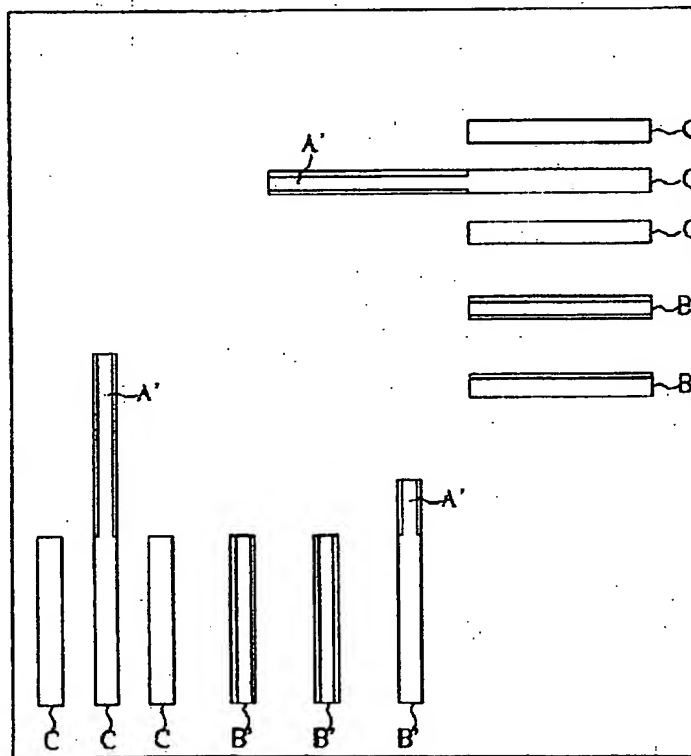
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(57) **ABSTRACT**

A method of correcting a mask layout is provided. The mask layout includes a plurality of element patterns. An inspection program is executed to classify the element patterns of the mask layout into a plurality of element pattern types according to a pattern density of the element patterns. Following this, each of the element pattern types is corrected so as to prevent a plasma micro-loading effect.

17 Claims, 6 Drawing Sheets



DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued hereon.

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In consideration of the payment by ASSIGNEE to ASSIGNOR of the sum of One Dollar (\$1.00), the receipt of which is hereby acknowledged, and for other good and valuable consideration.

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Hereby sells, assigns and transfers to **UNITED MICROELECTRONICS CORP.**
(hereinafter 'Assignee'), of (Assignee address)

No. 3, Li-Hsin Road 2, Science-Based Industrial Park

, and the successors assigns and legal representatives of the ASSIGNEE the entire right, title, and interest in and to any and all improvements which are disclosed in the invention entitled:

"METHOD OF CORRECTING A MASK LAYOUT"

"

Which is found in :

- (a) _____ U.S. patent application executed on even date
- (b) _____ U.S. patent application executed on _____
- (c) _____ U.S. application serial no. _____
- (d) _____ patent no. _____ issued _____

and, in and to, all Letters Patent to be obtained for said invention by the above application or ant continuation, division, renewal, or substitute thereof, and as to letters patent any reissue or re-examination thereof

ASSIGNOR hereby covenants that no assignment, sale, agreement or encumbrance has been or will be made or entered into which would conflict with this assignment;

ASSIGNOR further covenants that ASSIGNEE will, upon its request, be provided promptly with all pertinent facts and documents relating to said invention and said Letters Patent and legal equivalents as may be known and accessible to ASSIGNOR and will testify as to the same in any interference, litigation or proceeding related thereto and will promptly execute and deliver to ASSIGNEE or its legal representatives any and all papers, instruments or affidavits required to apply for, obtain, maintain, issue and enforce said application, said invention and said Letters Patent and said equivalents thereof which may be necessary or desirable to carry out the proposes thereof.

IN WITNESS WHEREOF, We have hereunto set hand and seal this 05/06/2002 (Date of signing).

(Type name of inventor)

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Jiunn-Ren Hwang

Chih-Chiang Liu

Signature of INVENTOR

Lee Kay Ming

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Hwang Jiunn-Ren

Liu, Chih-Chiang

SUPPLEMENTAL APPLICATION DATA SHEET

Electronic Version 0.0.11

Stylesheet Version: 1.0

Attorney Docket Number: NAUP0469USA

Publication Filing Type: **new-utility**

Application Type: **utility**

Title of Invention: **METHOD OF CORRECTING A MASK LAYOUT**

Customer Number Attorney: 027765

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